

**TECHNICAL MANUAL**

**MANAGEMENT OF RECOVERABLE  
AND WASTE LIQUID PETROLEUM PRODUCTS**

(ATOS)

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Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
<b>Title</b> .....		<b>2</b>			
<b>A</b> .....		<b>2</b>			
<b>i</b> .....		<b>2</b>			
<b>ii Blank</b> .....		<b>2</b>			
<b>iii</b> .....		<b>0</b>			
<b>iv Blank</b> .....		<b>0</b>			
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<b>1-2 Blank</b> .....		<b>1</b>			
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<b>2-2.1 Added</b> .....		<b>2</b>			
<b>2-2.2 Blank</b> .....		<b>2</b>			
<b>2-3 - 2-4</b> .....		<b>1</b>			
<b>3-1</b> .....		<b>1</b>			
<b>3-2</b> .....		<b>0</b>			
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<b>5-2 Blank</b> .....		<b>0</b>			
<b>A-1</b> .....		<b>0</b>			
<b>A-2 Blank</b> .....		<b>0</b>			

\*Zero in this column indicates an original page

## TABLE OF CONTENTS

Chapter	Page	Chapter	Page
INTRODUCTION.....	iii	3 DISPOSITION OF FUELS .....	3-1
1 GENERAL .....	1-1	3.1 Aircraft Fuels.....	3-1
1.1 Technical Order Responsibility.....	1-1	3.2 Ground Fuels .....	3-3
1.2 Terms Explained.....	1-1	4 DISPOSITION OF OILS.....	4-1
1.3 Clarification of Halogenated Hydrocarbons .....	1-1	4.1 Disposition of Used Oils .....	4-1
2 COLLECTION AND SEGREGATION .....	2-1	4.2 Aircraft Oils/Hydraulic Fluids .....	4-1
2.1 User Level/Generating Activities.....	2-1	4.3 Used Engine Oils.....	4-1
2.2 Collection and Segregation .....	2-1	5 ACCOUNTING .....	5-1
2.3 Collection Containers .....	2-1	5.1 General.....	5-1
2.4 Container Painting and Marking.....	2-2	A AVIATION FUEL BOWSER STANDARD SPECIFICATIONS .....	A-1
2.5 Categories of Segregation .....	2-3		

## LIST OF TABLES

Number	Title	Page	Number	Title	Page
2-1	Painting and Marking (Flammable Products) .....	2-3	3-1	Recovery Test Criteria .....	3-2
2-2	Painting and Marking (Combustible Products) .....	2-4	3-2	Turbine Fuel Blending (Obtain Laboratory Guidance Prior to Utilizing the Instructions Below) .....	3-3



## INTRODUCTION

### 1. PURPOSE.

This technical order provides guidelines for collecting, segregating, and processing Recoverable and Waste (R&W) petroleum products. The installation R&W petroleum products management program, developed in accordance with Air Force Instruction (AFI) 23-502, will determine base organizational responsibilities for the above functions. This program will be approved by the base or installation commander and a copy will be forwarded to the major command focal point.

### 2. SCOPE.

These instructions supplement applicable environmental regulations by providing procedures and requirements for the collection, segregation, storage, and disposition of R&W petroleum products which are generated through normal operations of Air Force activities.



## CHAPTER 1 GENERAL

### 1.1 TECHNICAL ORDER RESPONSIBILITY.

DET 3, WR-ALC/AFTH is responsible for this technical order.

### 1.2 TERMS EXPLAINED.

- a. Generating Activity. A base agency (host, tenant, contractor) that generates recoverable or waste petroleum products.
- b. Recoverable Parts:
  - (1) Reclaimable Product. Product of known or determinable quality that can be used for the original grade without reprocessing. For example, JP-8 recovered from bowzers and returned directly to bulk or operating storage.
  - (2) Recyclable Product. Product that does not meet its original specification, but which through processing can be recovered for the original grade or a lower grade without reprocessing except settling time, filtration, and/or blending.
- c. Waste Product. Product that is no longer suitable for any use on an installation because of excessive contamination or quality degradation.
- d. R&W. Recoverable and waste petroleum products.
- e. The term bowser shall mean a four-wheeled trailer mounted tank having a capacity from 200 to 600 gallons.

### 1.3 CLARIFICATION OF HALOGENATED HYDROCARBONS.

- a. The provisions of this technical order are not applicable to the handling, recovery, or disposition of halogenated hydrocarbons. Therefore, the following definition and examples are provided to prevent the unauthorized commingling of halogenated hydrocarbons with R&W petroleum products defined in Paragraph 2.5 of this technical order.
- b. Halogenated hydrocarbons are petroleum based compounds which contain one or more halogens. These halogens include fluorine, chlorine, bromine and iodine. When halogenated compounds are burned, corrosive, and toxic products are formed. Personnel who suspect the presence of halogenated compounds should notify the base Civil Engineers.
  1. PCB – Polychlorinated biphenyl transformer insulating oils, also known by trade name askarels
  2. CB – Bromochloromethane fire extinguisher material
  3. PERCHLORDETHYLENE – Vapor degreasing solvent
  4. TRICHLOROETHYLENE – Vapor degreasing solvent
  5. TRICHLORETHANE – Vapor degreasing solvent
  6. TRICHLOROTRIFLUOROETHANE – degreasing solvent
  7. CHLOROFORM, etc.





## CHAPTER 2

### COLLECTION AND SEGREGATION

#### 2.1 USER LEVEL/GENERATING ACTIVITIES.

Specific responsibilities shall be outlined in the installation R&W petroleum products management program developed in accordance with AFI 23-502. The following technical guidelines/information are provided for those who manage and/or accumulate R&W petroleum products.

#### 2.2 COLLECTION AND SEGREGATION.

- a. Careful collection and segregation of R&W petroleum products will increase their value and also reduce the threat of environmental pollution. The initial cost of establishing an R&W petroleum products management program may be offset by less expense in disposal, by use of R&W petroleum products for other applications, and by sale in markets that may become available if products are segregated. Segregation shall be in accordance with Paragraph 2.5.
- b. AF studies have shown that recovered mineral oils, JP-8, and other liquid fuels, and all non-halogenated recoverable solvents can be blended with burner fuel oil (ASTM D 396). AFCEC TR-76-2, WASTE POL DISPOSAL THROUGH ENERGY RECOVERY, should be consulted for information on fuel blending systems and practices.

#### 2.3 COLLECTION CONTAINERS.

- a. Collection containers, such as 55-gallon drums, shall be installed in the vicinity of shop areas after coordination with the local ground safety office and fire department. Containers should be placed to comply with National Fire Protection Association Codes and the Base Spill Prevention Control and Countermeasures Plan. Containers should be clean, reusable, easily handled, and easily stored. Those containers positioned at collection points, that are designated for the collection of flammable products (flash point below 141°F (60.5°C)) shall be bonded between containers with at least one container or the drum rack connected to ground. Mobile carts or bowsters that contain flammable products shall be bonded to the product transfer point prior to and during all product transfer operations. All containers shall have appropriate closure devices to prevent vaporization and/or entry of water. These containers may be mounted on carts, dollies, or trailers to facilitate mobility, safety, and ease of handling.

- b. Containers such as carts or bowsters used to recover fuel drained from aircraft sumps or residual fuel must be clean, include a low point drain, be capable of preventing the entrance of material other than the product being collected, and be marked for, and restricted to a single grade of product, e.g., JP-8, AVGAS. (See T.O. 00-25-172). Use of large volume containers and bowsters should be coordinated with the local ground safety and fire department.
- c. All containers used for the collection or storage of R&W petroleum products shall be kept isolated from those containing specification products. To prevent accidental aircraft servicing, vehicles used for the collection of waste products shall be conspicuously marked. These vehicles will not be equipped with single point or other nozzles used to service aircraft.
- d. Salvaged or excess fuel servicing vehicles may be retained and used for R&W petroleum products with the approval of the major command and the vehicle item manager. One 1200 GL fuel servicing vehicle, NSN 2320-00-177-6777, is authorized in AS 010 for waste products.
- e. Generating activities will arrange for the disposition of recyclable products through DRMO. These products will be drummed and marked for identification and turned in at bases not serviced by DRMO contract pick-up.
- f. The aviation fuel mission support refuelers/defuelers can be used to defuel JP-8 and JP-8+100 products from bowsters. Bowsters are defined in Paragraph 2.3, Step b. Prior to recovery of the product the bowser must be inspected and approved by the base Fuels Laboratory personnel. After recovery the product may be issued to ground power, the hush house or returned to bulk at the proper blend ratio.
  - (1) Recovered product may be issued to an aircraft after filtration through two separate filter separators. Consequently, recovered product must be returned to bulk or transferred to another refueler to assure filtration through two filter vessels before issue to an aircraft.
  - (2) Refuelers or dedicated defuelers will not be used to recover products from collection tanks, pits, collection drums, or to recover spills or waste products, except in an emergency.

(3) Dedicated defuelers will not be used to issue fuel to aircraft.

(4) MAJCOM/Fuels Management Division must approve emergency use of mission support assets to recover petroleum spills or waste products.

g. If 55-gallon drums are not available on base or from DRMO, either NSN 8110-00-597-2353, 16 gauge drum or NSN 8110-00-292-9783, 18 gauge drum can be purchased from DGSC, Richmond, VA. Storage tanks can be locally purchased. Bowsers and modified tank vehicles are usually built or modified for specific local use.

## 2.4 CONTAINER PAINTING AND MARKING.

### NOTE

Commercial NFPA, OSHA approved containers, (safety cans), drums, tanks, and bowzers will be labeled identifying contents IAW AFOSH Standard 91-501. Existing collection containers will be marked in accordance with this change upon repainting/reordering.

a. The specified colors and markings required in compliance with Title 29 Code of Federal Regulations (CFR) 1910.144 and this technical order are waived in deference to established TONE DOWN requirements or to preclude any potential conflict with host country national colors. Tone down painting and markings should be standardized in accordance with Table 2-1 or Table 2-2. Commanders in overseas areas may authorize deviation from the colors prescribed herein.

b. Containers such as 55-gallon drums that are to be used on a one-time basis for the collection and turn in of products to DRMO will be marked as follows:

- (1) All existing markings on the drum will be obliterated by overspraying with black paint.
- (2) Mark the drum with 1-inch white letters to identify the product to be collected and transferred to DRMO.

### NOTE

Unidentified products will not be accepted by DRMO prior to chemical analysis and identification. Therefore, product segregation and identification should be maintained by generating activities.

c. Containers, drums, tanks, and bowzers, 600-gallon capacity or less, that are to be used on a recurring basis to collect recoverable flammable petroleum

products with flash point below 141°F (60.5°C) shall be painted red with a yellow band around the center. The yellow band shall not exceed one-third of the container height. Grade of product, bowser serial number, organization, and other information desired will be marked as specified in the applicable step below.

### NOTE

Deleted

(1) Product markings on tanks and bowzers with a capacity from 200 to 600 gallons shall be stenciled with minimum 4-inch black letters on the yellow band, i.e., Reclaimed JP-8. Bowser/tank serial number, and organization, will be marked with minimum 2-inch white letters/decals on the red background. Other information may be applied on the red background with less than 2-inch white letters.

(2) Product markings on containers, drums, and tanks with a capacity from 55 to 200 gallons will be stenciled with minimum 2-inch black letters on the yellow band. Serial numbers and organization will be marked with minimum 1-inch white letters on the red background. Other information may be applied on the red background with less than 1-inch white letters.

(3) Product markings on small containers and safety cans with a capacity less than 55 gallons will be marked with minimum 1-inch black letters on the yellow band. Other information may be applied with less than 1-inch white letters on the red background.

d. Containers, drums, tanks, and bowzers 600 gallons capacity or less that are used on a recurring basis for the collection of combustible petroleum products shall be painted with a yellow band around the center. The yellow band shall not exceed one-third of the container height. Product markings will be stenciled with black on the yellow band. Serial numbers, organization, and other information will be applied with white letters. The letter size specified by capacity for flammable containers, drums, tanks, and bowzers will be used to mark combustible containers, drums, tanks, and bowzers.

### NOTE

For the purpose of this technical order, flammable fuels and liquids are those having a flash point temperature below 141°F (60.5°C). Combustible products are those having a flash point temperature at or above 141°F (60.5°C).

- e. Additional information or labels may be required in compliance with state or host environmental requirements.
- f. Hazardous waste will be labeled in accordance with the Resource Conservation and Recovery Act.



- g. Vehicles utilized to collect or store recoverable and waste petroleum products shall be marked in accordance with T.O. 36-1-191, and shall be kept isolated from similar vehicles containing specification products.
- h. Tone Down painting and marking of R&W product containers, drums, tanks, and bowsters, 600 gallons or less will be as specified in Table 2-1 or Table 2-2. The letter size to be used will be as specified in Paragraph 2.4, Step c or d.

## 2.5 CATEGORIES OF SEGREGATION.

Mixed petroleum products are liquids within Category 1, 2, 3, or 4 below that have been commingled. Commingled products containing synthetics, lead, or halogenated hydrocarbons have little or no value and must be disposed of as hazardous waste. Generation of mixed liquids should be minimized and special care will be exercised to prevent commingling and the creation of hazardous waste. Disposal of mixed petroleum products will be in accordance with the installation R&W petroleum products management program.

### a. Category 1: Fuels

- Calibrating Fluid (MIL-PRF-7024)
- Purging Fluid (MIL-PRF-38299)
- Jet Fuels
- Avgas
- Mogas

- Kerosene
- Diesel Fuel

### b. Category 2: Oils

- Hydraulic Fluid, Mineral Based (MIL-PRF-5606, MIL-PRF-6083)
- Mineral Base Solvents (MIL-PRF-680)
- Lubricating Oils
- Preservative Oils

### c. Category 3: Engine Oils

- Used Motor Crankcase Oils (A-A-52039)
- Reciprocating Aircraft Engine Oil (SAE-J1966, SAE-J1899)

## NOTE

Category 3 oils may contain lead, a by product of combustion and blow-by, and should not be mixed with other categories of oils or R&W products.

### d. Category 4: Synthetic Oils

- Used Hydraulic Fluid (Synthetic) (MIL-PRF-83282)
- Used Turbine Engine Oils (Synthetics) (MIL-PRF-7808, MIL-PRF-23699)

### e. Category 5: Mixed Liquids

**Table 2-1. Painting and Marking (Flammable Products)**

	<b>Standard</b>	<b>Tone Down</b>	<b>Desert Tone Down<sup>2</sup></b>
Background	8010-00-616-7487 Red, Enamel, Full Gloss, Color No. 11105	8010-01-131-9194 Polyurethane Coating, Green, Color No. 24052, MIL-PRF-85285	8010-01-234-2935 Sand, Color No. 33303, Polyurethane Coating
Center Band	8010-00-527-2045 Yellow, Enamel, Full Gloss, Color No. 13538	8010-00-297-0547 Black, Lusterless, Color No. 37038	8010-01-130-3345 Drab Field, Color No. 33105, Polyurethane, Kit with two Components
Marking on Band	8010-00-527-2050 Black, Enamel, Full Gloss, Color No. 17038	8010-00-472-5512 Red, Lusterless, Color No. 31136	8010-01-234-2935 Sand, Color No. 33303, Polyurethane Coating
Marking on Background	White, Enamel, Alkyd Gloss, Low VOC, Color 17925 IAW QPL-TT-E-489	8010-00-472-5512 Red, Lusterless, Color No. 31136	8010-01-229-7541 Black, Color No. 37030, Polyurethane Coating
Other			8010-00-181-8079 Thinner, Aliphatic Polyurethane Coating
NOTES:			
<sup>1</sup> Size of letters will be as specified in Paragraph 2.4, Step c.			
<sup>2</sup> Desert Tone Down are polyurethane coatings which are chemical agent resistant.			

**Table 2-2. Painting and Marking (Combustible Products)**

	<b>Standard</b>	<b>Tone Down</b>	<b>Desert Tone Down</b>
Background	8010-01-131-9194 Polyurethane Coating, Green, Color No. 24052, MIL-PRF-85285	8010-01-023-4261 Polyurethane Coating, Green, Color No. 24052, MIL-PRF-85285	8010-01-234-2935 Sand, Color No. 33303, Polyurethane Coating
Center Band	8010-00-527-2045 Yellow, Enamel, Full Gloss, Color No. 13538	8010-00-297-0547 Black, Lusterless, Color No. 37038	8010-01-130-3345 Drab Field, Color No. 33105, Polyurethane Kit with two Components
Marking on Band	8010-00-527-2050 Black, Enamel, Full Gloss, Color No. 17038	8010-00-472-5512 Red, Lusterless, Color No. 31136	8010-01-234-2935 Sand, Color No. 33303, Polyurethane Coating
Marking on Background	8010-00-616-7487 Red, Enamel, Full Gloss, Color No. 11105	8010-00-472-5512 Red, Lusterless, Color No. 31136	8010-00-181-8079 Black, Color No. 37030, Polyurethane Coating
Other			8010-00-181-8079 Thinner, Aliphatic Polyurethane Coating
NOTES: <sup>1</sup> Size of letters will be as specified in Paragraph 2.4, Step d. <sup>2</sup> Desert Tone Down are polyurethane coatings which are chemical agent resistant.			

## CHAPTER 3

### DISPOSITION OF FUELS

#### 3.1 AIRCRAFT FUELS.

- a. All disposal actions shall be consistent with the spirit and intent of national environmental pollution control policies, other Air Force directives and this technical order.
- b. Residual fuel removed from aircraft is not necessarily contaminated and should be recovered and returned to storage tanks if quality can be determined through use of Table 3-1. If quality cannot be determined locally, the suspect fuel will be stored in temporary containers (tanks or drums) pending disposition or blending instructions from DET 3, WR-ALC/AFT, Aerospace Fuels Laboratory Technical Division. Composite samples representative of such product will be submitted to the area fuels laboratory, (see T.O. 42B-1-1, Table 4-1) upon accumulation of economical quantities in excess of 1000 gallons. If test results indicate product is unsuitable for use or blending, disposal shall be in accordance with the installation R&W petroleum products management program.

**WARNING**

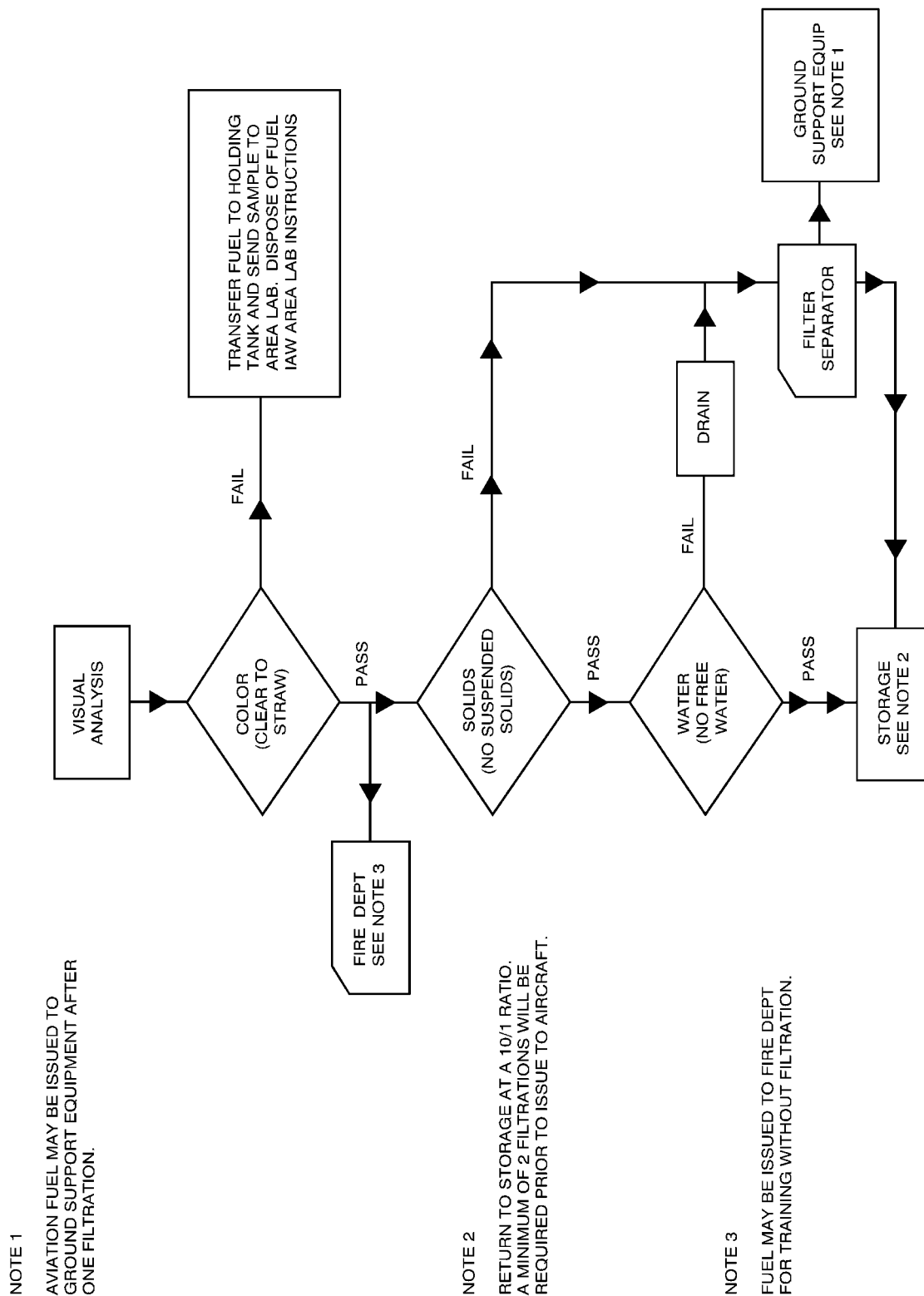
Diethylene Glycol Monomethyl Ether (DIEGME) is used in turbine fuels as a Fuel System Icing Inhibitor (FSII). Undiluted FSII is both combustible and toxic. It is harmful if inhaled or absorbed through the skin. It also causes eye irritation. In laboratory studies, birth defects and adverse effects on pregnancy have been observed; prolonged and repeated exposure has caused damage to male reproductive organs. Before handling undiluted FSII, consult appropriate safety and occupational health authorities for guidance.

- c. The normal concentration of FSII in fuels is not considered to be hazardous because the relative hazards of fuel handling are caused by the fuel and not the FSII additive. However, recent tests have shown that storage tank bottom waters may accumulate concentrations of FSII as high as 50 percent, making exposure to these bottom waters potentially hazardous. Therefore, water concentrations removed from aircraft sumps, fuel bowsers, collection containers/tanks containing an unknown

concentration of FSII requires proper handling and disposal. Water from any of the above sources containing FSII will not be drained on the ground or into the installation storm drainage system. FSII is a biodegradable hydrocarbon based substance that should present no difficulty in the concentrations present in the water removed from aircraft sumps, fuel bowsers, collection containers/tanks, etc, when drained into the base sanitary sewer system. Consult Environmental Management to ensure compliance with local, county, state, and federal environmental laws and regulations. Environmental Management, in coordination with the Base Civil Engineer, will identify sanitary sewer inlets suitable for the disposal of water/FSII concentrations from the sources identified or alternate procedures.

- d. When handling FSII diluted with jet fuel or water, the health hazards are significantly reduced. Goggles, aprons, and an air purifying respirator are not required in an outdoor environment. Skin contact should be avoided by wearing butyl rubber gloves when draining water from bowsers, tanks, sumps, containers, etc.
- e. Care must be exercised when reclaimed product is being returned to storage to assure a minimum of two filtrations prior to being reserviced to aircraft. Reclaimed product may be issued to ground support equipment after one filtration. The return of reclaimed product shall be at a ratio of 1 gallon reclaimed product to 10 gallons of product currently in the storage tank. The return of reclaimed product into tanks that are equipped with a common receipt/discharge line will be followed by a normal receipt or other transfer procedure to assure that reclaimed product is flushed from the common receipt/discharge line. Reclaimed product may be returned to all hydrant system operating tanks or system product recovery tanks under the following conditions:
  - (1) Prior to any transfer, recovered product must be sampled and visually inspected by a qualified fuel laboratory technician. Product that meets the test criteria of Table 3-1 will be reclaimed.
  - (2) All reclaimed product will be blended and filtered by a minimum of two filtrations prior to issue for aircraft.

Table 3-1. Recovery Test Criteria





- (3) Reclaimed product will not be returned to any bulk or operational tank containing specification product at any ratio exceeding 1 gallon of reclaimed product to 10 gallons of specification product in the bulk or operational tank.
- (4) Reclaimed product or product from any system recovery tank will be filtered through a minimum of one filter separator prior to returning the product to an operational tank on a Type III, IV or V hydrant system.
- f. When JP-5 is used as purging fluid for aircraft integral tanks and fuel cells and the flash point of the product is lowered to 120°F or less, the JP-5 shall be placed into a holding tank. Unless other disposition has been approved, excess product will be transferred and blended into JP-8 inventory. A minimum blend ratio of one part JP-5 to four parts JP-8 will be maintained during blending. After blending, the fuel can be serviced into aircraft or other equipment that operates on JP-8 fuel, provided that quality requirements of T.O. 42B-1-1 are met.
- g. On occasion, JP-5 is used as a purging fluid for refueling equipment, bladders, injectors, etc. When used for this purpose, the minimum acceptable flash point of the purging fluid will be no less than

100°F. When the JP-5 no longer meets the minimum 100°F flash point requirement, the product may be blended into the JP-8 inventory provided that quality requirements of T.O. 42B-1-1 are met. A minimum ratio of one part JP-5 to four parts JP-8 will be maintained during blending.

### 3.2 GROUND FUELS.

- a. All fuels drained from motor vehicles, heavy equipment, power generators, etc., shall be recovered and:
  - (1) Returned to the same source from which taken, or
  - (2) Returned to base stocks.
- b. Ground fuels unfit for use as intended or alternate grades shall be disposed of in accordance with the installation R&W petroleum management program.

#### NOTE

Aviation fuels, motor fuels, and solvents will not be stored, blended or burned in any heating facility without prior approval from the Major Air Command, Civil Engineer.

**Table 3-2. Turbine Fuel Blending (Obtain Laboratory Guidance Prior to Utilizing the Instructions Below)**

From	Blending Ratio	To
Jet A	One to Four	JP-8
Jet A-1	One to Four	JP-8
JP-4	One to One Hundred	JP-8
JP-5	One to Four	JP-8
JP-7	One to Four	JP-8
JPTS	One to One	JP-8
JP-10	One to Ten	JP-8
Mixed Turbine Fuels	Contact DET 3, WR-ALC/AFTH	JP-8
Blend JP-8+100	One to One Hundred	JP-8
Diesel Fuel	Contact DET 3, WR-ALC/AFTH	JP-8
MOGAS	Contact DET 3, WR-ALC/AFTH	JP-8
AVGAS	Contact DET 3, WR-ALC/AFTH	MOGAS
EXAMPLE		
If downgrading 5,000 gallons of Jet A to JP-8, the 5,000 gallons of Jet A must be blended with at least 20,000 gallons of JP-8.		
NOTE		
Depending on the type of fuel downgraded and the blending ratios used, it may be necessary to add conductivity additive or FSII to the final blend. Specifications for flash point, cloud point, etc., must be maintained after blend.		



## CHAPTER 4

### DISPOSITION OF OILS

#### 4.1 DISPOSITION OF USED OILS.

All DoD components should sell used oil through DRMO to be reprocessed to lubricating oil stock if possible. If reprocessing is not commercially possible, the used oil, depending on location, may be used as a fuel supplement in burner equipment. In some instances it may be necessary for DRMO to dispose of used crankcase oils as hazardous waste.

- a. Used oil disposal practices which are not environmentally acceptable, e.g., use of oil for weed control, insect control, road dust control, open pit burning, and dumping are prohibited.
- b. The base Bio-Environmental Engineer must be consulted prior to burning any crankcase oils that may have lead contamination.

#### 4.2 AIRCRAFT OILS/HYDRAULIC FLUIDS.

Oils and hydraulic fluids drained from aircraft must be collected in clean containers. Segregation between products will be maintained to enhance resale value or to minimize disposal costs. Used synthetics command a high resale value and should not be contaminated with petroleum products.

- a. Oils contaminated by halogenated hydrocarbons will not be blended with fuel oil for burning. Corrosive products such as hydrochloric and hydrofluoric acids and toxic gases such as phosphene are released during combustion. These combustion products may damage furnaces and other heating equipment, and may create a health hazard.
- b. The burning of unblended and untreated waste mineral oil may produce unacceptable gas and/or solid stack emissions and should not be attempted without prior consultation with Civil and Bio-Environmental Engineers. It is very important to remove all solid contaminants from waste material oils. Failure to do this may cause burner nozzle clogging and/or excessive stack emissions.

#### 4.3 USED ENGINE OILS.

Used engine (vehicle or aircraft) oils must be segregated from other petroleum products because of possible lead contamination. Disposal will be in accordance with the installation R&W petroleum products management program.



## **CHAPTER 5 ACCOUNTING**

### **5.1 GENERAL.**

Accounting and financial management of R&W petroleum products are outlined in AFMAN 23-110, USAF Supply Manual and AFI 23-502, Section D.



## APPENDIX A

### AVIATION FUEL BOWSER STANDARD SPECIFICATIONS

A.1 Aviation Fuel Bowsers procured or constructed after 15 April 1986 for aircraft ground support will meet these standard specifications.

#### A.2 Minimum Standards:

- a. Will be constructed so that there is a low point to which contaminants will settle with a drain valve at that lowest point.
- b. Depending upon capacity, will have one or more baffles on the inside to control sloshing. Maximum horizontal and longitudinal distance between baffles is 2 feet.
- c. All fuel wetted parts of the bowser will be of corrosion resistant material. Any connections or dissimilar metals will have provisions to prevent galvanic corrosion.
- d. Must have an access panel/panels on the top to allow for repair and/or inspection to all baffled compartments inside the bowser.
- e. Will be designed so that fuel enters the fuel bowser tanks (free volume) not more than 2 inches from the bottom.
- f. Will have a vent at the opposite end from where the fuel enters. The opening of the vent will face downwards, will have mesh screen across the opening which can be removed for periodic maintenance and cleaning.
- g. Will have some type of device (either gauge or sight glass) to indicate the amount of fuel in the bowser.
- h. Will have a collection box or funnel capable of being raised to within 6 inches of the aircraft drain point. The edges of the box or funnel must be cushioned to prevent damage to the aircraft surface.
- i. The collection box or funnel will have a filter screen to catch solid objects. The filter must be made from MIL-S-12875 material or equivalent.
- j. The collection box or funnel will have a lid with a hasp so a device can be used to insure lid stays closed when not in use, thus preventing entry of foreign objects, debris, or falling precipitation. If bowsers are stored in uncontrolled areas, a hasp with lock is required to prevent unauthorized use of the bowser.
- k. The fuel drain/defuel port will be easily accessible and be either an aircraft single point connection or other suitable sure locking connector.
- l. Large clearly visible markings will be on the bowser to indicate its purpose contents (JP-5 or JP-8) and any other markings as required by appropriate directives.
- m. Will have at least two grounding reels mounted in accordance with appropriate directives.
- n. At least two of the four wheels will have an integral braking system to stop the trailer from moving.
- o. Running gear will be sized to safely carry the weight of the bowser with full load of fuel.
- p. Will not have a pintle hook.
- q. Will have a hand pump mounting capability for fuel transfer.
- r. Large bowser will have forklift points for mobility.
- s. Bowser designs will adhere to established ground fuel handling safety requirements.
- t. Bowser tanks will be constructed of corrosion resistant materials (i.e., stainless steel, aluminum, or epoxy coated steel).

